Claims

1. A method of generating a gas plasma characterised by the feature that the applied voltage exhibits a waveform which is truncated.

2. A method of generating a gas plasma characterised by the feature that the applied voltage exhibits a waveform which decays asymmetrically from its peak value.

3. A method of generating a gas plasma characterised by the feature that the applied voltage exhibits a waveform which is truncated and which decays asymmetrically from its peak value.

4. A method as claimed in any of the preceding claims, wherein the applied voltage, V, as a function of time, t, said time t being measured from any arbitrary instant, takes the form of a waveform, V(t), of cycle time T, wherein in at least one of the half cycles, i.e. between (t=i T) and (t= i T +T/2) or between (t=i T +T/2) and (t = (i+1)T), where i takes integer values, the waveform is characterised by the magnitude of the integral of the voltage with respect to time being greater in the first half of said half cycle than in the second half of said half cycle.

5. A method as claimed in any of claims 1 to 3, wherein the applied voltage, V, as a function of time, t, said time t being measured from any arbitrary instant, takes the form of a waveform, V(t), of cycle time T, wherein at least one of the half cycles, i.e. between (t=iT) and (t=iT + T/2) or between (t=iT + T/2) and (t=(i+1)T), where i takes integer values, the waveform is characterised by a period of substantially constant voltage.

6. A method as claimed in claim 5, wherein the applied voltage is defined by equation E1 herein.

7. A method as claimed in claim 4, wherein the applied voltage is defined by equation E2 herein.

8. A method as claimed in claim 4, wherein the applied voltage is defined by equation E3 herein.

9. A method as claimed in any of claims 1 to 3, wherein the applied voltage is generated by the action of a control system, said control system using a measurement of the plasma discharge current as an input signal.

10. A method for generating a non-thermal atmospheric gas plasma comprising:

applying a voltage having a periodic voltage waveform across a gas, thereby causing a current to flow through the gas, wherein the maximum magnitude of the voltage in each period, is closer in time to a first preceding maximum in the magnitude of the current than to a second following maximum in the magnitude of the current and wherein the voltage waveform follows a sinusoidal function in a portion preceding the maximum magnitude of the voltage and is reduced below said sinusoidal function in a portion following the maximum magnitude of the voltage.

11. A method for generating a non-thermal atmospheric gas plasma as claimed in claim 10, wherein, in a single period, the magnitude of the voltage waveform comprises a positive gradient in a first portion of time, a zero gradient in a second portion of time and a negative gradient in a third portion of time.

12. A method for generating a non-thermal atmospheric gas plasma as claimed in claim 11, wherein a maximum magnitude of the gradient of the voltage in the first portion of time is greater than a maximum magnitude of the gradient of the voltage in the third portion of time.

13. A method for generating a non-thermal atmospheric gas plasma as claimed in claims 11 or 12, wherein in the single period, the voltage waveform further comprises a zero gradient in a fourth portion of time.

14. A method for generating a non-thermal atmospheric gas plasma as claimed in claim 13, wherein the single period consists of, in order, the first, second, third and fourth portions of time.

15. A method for generating a non-thermal atmospheric plasma as claimed in any of claims 10 to 14, wherein the voltage waveform is non-sinusoidal.

16. A method of generating a non-thermal atmospheric gas plasma, characterised by applying a voltage across a gas, wherein the applied voltage exhibits a waveform which is a truncated sinusoid.

17. A method of generating a non-thermal atmospheric gas plasma characterised by applying a voltage having a periodic voltage waveform across a gas, thereby causing a current to flow through the gas, the voltage exhibits a waveform which decays asymmetrically from its peak value, wherein the peak value is the maximum magnitude of the voltage in each period, and wherein the peak value is closer in time to a preceding maximum in the magnitude of the current than to a second following maximum in the magnitude of the current.

18. A method as claimed in claim 17, wherein the applied voltage exhibits a waveform which is, in part, a truncated sinusoid and which decays asymmetrically from its peak value.

19. A method of generating a non-thermal atmospheric plasma substantially as hereinbefore described with reference to and / or as shown in the accompanying drawings.